

tions. These cells vary in shape, some being almost wedge-shaped. 2. The next region (II) contains four or five layers of thin-walled cells, which are somewhat irregular, sometimes five or six-sided in section, separated by a few intercellular spaces, and containing a small amount of coloring substance. 3. The third region (III) is decidedly a pigment layer. The cells are small, regular and thick-walled. 4. The innermost region (IV) contains two layers of nearly empty cells. They are thin-walled, with the exception of the wall next the nucellus (V), and somewhat rectangular. It will be noticed that the "crystal layer" found in many of the harder seeds is entirely wanting.—CHAS. U. STOCKBARGER, *Wabash College, Indiana*.

**Some notes on *Hypericum*.**—Since the publication of my revision of North American Hypericaceæ in the *BOTANICAL GAZETTE* for April and May, 1886, I have received some very interesting material from Dr. A. Gattinger, of Nashville, Tenn., who has for many years been making a careful study of the state flora. Tennessee seems to be a center for this group, where northern and southern forms mingle. Eighteen species of *Hypericum* are found within its borders, and it is not wonderful that in some of its almost inaccessible regions a new species has been discovered.

A very interesting discovery is that of *H. Kalmianum* L. in the oakbarrens of Tullahoma, Middle Tennessee, July 10, 1882. Heretofore thought to be restricted to the region of the great lakes, its occurrence in this widely separated locality is very unexpected. As a rule the specimens seem more robust than their northern representatives, but not more so than some specimens I collected last August at Point Abino, near Buffalo. It would be interesting to learn more of the surroundings, but "oakbarrens" give us probably the same conditions of soil as are found to favor the northern forms.

In the revision referred to a separation is made between *H. Kalmianum* and the group containing *H. prolificum* and *H. densiflorum* upon the basis of five- and three-celled capsule. Undoubtedly this distinction occasionally breaks down, as *H. Kalmianum* is found with capsules four- to six-celled, and the capsule of *H. densiflorum* is often four-celled, while the new species described below combines characters of both groups, and forms a complete transition from *H. Kalmianum* to the species that follow. While these exceptions show that the division is not an absolute one, it still is the rule, and furnishes as good a distinguishing character as can be expected in species so closely allied. For the present, then, the new species, while it is undoubtedly most closely related to *H. densiflorum* and *H. prolificum*, will be grouped most conveniently with *H. Kalmianum*, on the basis of a five celled capsule, as follows:

3.\* ***H. lobocarpum*** Gattinger, n. sp.<sup>1</sup> Shrub, five to seven feet high, with upright branches: leaves as in *H. prolificum*: flowers as in *H. densiflorum*: sepals not foliaceous, linear-lanceolate: capsule two or three lines long, lanceolate and tapering to the long strong beak, completely five-celled and deeply five-lobed, in most cases the five carpels almost distinct, and at maturity falling away from a central axis.—Low swampy lands, in the Orange [sand formation, near Hol-

<sup>1</sup>Announced to the Botanical Club of the A. A. A. S., Buffalo meeting, 1886.



low-rock, Carroll Co., West Tennessee, collected first in fruit, September, 1867 in flower, July, 1886, *Gattinger*; also, "W. Mississippi or E. Tennessee," *Dr. J. T. Stewart*, 1863. *Dr. Gattinger* describes it as "growing in a swampy region difficult to penetrate, amidst *Rosa Caroliniana* and *Nyssa aquatica*." He found two shrubs, and no more. The *Stewart* specimen is in the Harvard herbarium, and is simply a fragment of a fruiting specimen which has remained undetermined, but it is undoubtedly this species. The great peculiarity consists in the deeply five-lobed capsule, which is more differentiated than in any other member of the genus and serves well to distinguish the species. Some species are slightly lobed, but in this case the carpels seem almost distinct and are simply held together by their attachment to a central axis, from which they fall away at maturity. The size and general habit of the plant are like *H. densiflorum*, with perhaps even denser flower clusters, while the broad leaves are exactly those of *H. prolificum*. *Mr. Canby* has collected New Jersey forms of *H. densiflorum* bearing the leaves of *H. prolificum*, which closely resemble *H. lobocarpum*, except in the capsule characters. *Dr. Gattinger* is to be commended for the persistence with which he urged the claims of this species to recognition.—**JOHN M. COULTER.**

**How the humble-bee obtains nectar from *Physostegia Virginiana*.**—While passing through a patch of the "False Dragon-head," I noticed that a goodly number of a large species of humble-bee were alighting on the flowers and darting their heads deep in between the calyx and corolla, at the upper side of the latter. At first I thought they were collecting nectar from between the calyx and corolla, and commenced to look for the glands. But on inspection, I found that on the upper side of many of the corollas, near the base, was a longitudinal slit, usually near one-third inch long. This was the case in nearly all the older flowers examined, while in those just opened, or still opening, the slit was usually absent. On gently pressing down on the outer portion of the slitted flowers, I found that the sides of the opening were thrown apart, thus exposing the upper portion of the four-lobed ovary and lower parts of the pistil and stamens, and making access easy to the nectary glands at the base of the ovary. In addition to the humble-bee there were a number of other insects visiting the flowers, but they entered in the usual way, through the corolla. It is not unusual to find tubular flowers, especially the closed gentians and *Tecoma radicans*, with holes eaten through them near the base, through which insects pass in and out, which holes are nearly always made by ants. But I do not remember to have seen any record of instances where an insect made a slit, through which to collect the sweets of a flower.—**J. SCHNECK, Mt. Carmel, Ill.**

**Home-made bacteria apparatus.**—For the cultivation of bacteria and other microscopic organisms certain utensils are essential, others are very serviceable without being indispensable. The German investigators have given much attention to the construction of incubators, sterilizers, culture vessels of various kinds, implements and accessories in great numbers, and of convenient utility. If it is desired to fit up a complete laboratory for the study of these